





Docket No.: 43888-098

**PATENT** 

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Customer Number: 20277

Motokazu WATANABE, et al.

Confirmation Number: 2364

Serial No.: 09/807,692

Group Art Unit: 1753

Filed: April 17, 2001

Examiner: Alexander S. Noguerola

For:

**GLUCOSE SENSOR** 

## SUBSTITUTE INFORMATION DISCLOSURE STATEMENT (PREVIOUSLY SUBMITTED JUNE 26, 2003)

Mail Stop Patent Application Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Dear Sir:

The following Substitute Information Disclosure Statement is being submitted to replace Applicants' previously submitted Information Disclosure Statement on June 26, 2003. Applicant noted two typographical errors in its previously submitted IDS of June 26, 2003.

In particular, on page 2 of Applicants' 1449 form, the author name of TAKASHI (third reference from the bottom of page 2) was incorrectly spelled. The correct spelling is "TAKAHASHI". This change has been made on the attached revised 1449 form. Also, Applicant noted that the reference to SODE, second from the bottom of page 3 of Applicants' 1449 form, incorrectly listed the starting page as 441. The correct starting page is "444" of this article. The attached revised 1449 form corrects this error.

09/807,692

These references have already been submitted and considered by the Examiner in charge of

the subject application. The attached substitute 1449-form is being submitted to facilitate the

accurate printing of the submitted references. Accordingly, Applicant respectfully requests that the

attached revised 1449 form be used in printing the allowed application.

Please charge any shortage in fees due in connection with the filing of this paper, including

extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit

account.

Respectfully submitted,

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Date: April 1, 2004

SHEET 1 OF									Γ <u>1</u> OF <u>5</u>	
INFO			ON DISCLOS	SURE	ATTY. DOCKET NO. 43888-098		RIAL NO <b>807,692</b>			
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					APPLICANT Motokazu WATANABE, et al.					
	1	(PT	O-1449)		FILING DATE April 17, 2001					
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EXAMINER'S INITIALS	CITE NO.	1	Document Number ber-Kind Code2 (# known)	Publication Date MM-DD-YYYY	Name of Patentee or Applic Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear				
		US	6,059,946	05/09/2000	Yugawa, et al.					
	<del> </del>	US	5,424,204	06/13/1995	Aoyama, et al.	<del></del>	1		-	
		US	5,820,551	10/13/1998	Hill, et al.		1			
	<del> </del>	US	5,682,884	11/04/1997	Hill, et al.		1			
	-	US	5,554,339	09/10/1996	Cozzette, et al.		-			
		US	5,466,575	11/14/1995	Cozzette, et al.		-			
		US	5,334,508	08/02/1994	Hoenes		1	***		
	<del>                                     </del>	US 4,711,245		12/08/1987	Higgins, et al.	Higgins, et al.				
		US	5,762,770							
	B1	US	6,270,637	08/07/2001	Crismore, et al.					
		us	4,545,382	10/08/1985	Higgins, et al.					
		US	6,071,391	06/06/2000	Gotoh, et al.					
		US	6,025,203	02/15/2000	Vetter, et al.					
		us	5,378,628	01/03/1995	Gratzel, et al.	Gratzel, et al.				
		US	5,804,047 09/08/1998 Karube, et al.							
		US	6,077,660	06/20/2000	Wong, et al.	Wong, et al.				
		US	5,997,817	12/07/1999	Crismore, et al			*		
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		<u> </u>						Yes	No	
		1	JP 10-227755	08/25/1998				X		
	ļ	<u> </u>	EP 0 744 466 A2	11/27/1996	Azzoni, et al.			<b></b> _		
		<u> </u>	EP 0 735 363 A1	10/02/1996	Yoshioka, et al.			ļ		
		ļ	EP 0 636 879 A2	02/01/1995	Yamamoto, et al.					
		ــــ	EP 0 502 504 A1	09/09/1992	Yoshioka, et al.			$\vdash$		
		₩	EP 0 872 728 A1	10/21/1998	Yukawa, et al.			abstract		
		ļ	JP 9-140378	06/03/1997	Adachi, et al.			abstract		
		L	EP 0 357 027 A2	03/07/1990	Hayashi, et al. or, Title, Date, Pertinent Pages, E	(a.)		لــــــا		
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<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.



SHEET 2 OF 5

INFORMATION DISCLOSURE CITATION IN AN APPLICATION					ATTY. DOCKET NO. 43888-098						
					APPLICANT Motokazu WATANABE, et al.						
		(PT	O-1449)		FILING DATE GROUP April 17, 2001 1753						
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		C	APLUS MASLINSKA-SOL	LICH "Maleic Anhy	dride Copolymers in Clinical Analy 11-22).						
					idase: an Ideal Enzyme" Biosenso						
			A	opplications of Quit	ns Glucose Dehydrogenase and A noproteins, ed. Victor L. Davidson	,					
		S	Ferricyanide	as an Oxidising S	lons on the Performance of a Gluc substrate" Sensors and Actuators	n					
			CAP		et al. "Biosensor for Microanalysis						
					· · · · · · · · · · · · · · · · · · ·	O MARIKO, et al. "Biosensor."					
	-			· · ·	ncyclopedia of Reagents for Organ Incyclopedia of Molecular Biology						
	<del>                                     </del>			iochemistry, Physi	ology and Genetics of PQQ and P siology vol.40, ed. R.K. Poole (198	QQ-containing I		Advances in			
		YOS	SHIOKA, et al. "Disposabl	•	d on Bioelectrochemistry" National 71-75.	·	ort vol.42 n	o.2 (April 19	96)		
		1			ional Cyclodextrin: a New Class o Phenom. Mol. Recognit. Chem. (1			ing of .beta.	-		
	<u> </u>	CA	APLUS TAKAHASHI, et al.		llase Inhibitor, Validoxylamine A, c Zool. (1995), 30(1, 231-239).	on Three Specie	s of Flies" /	Appl. Entom	ol.		
				1997, J. Bioch	Bivalent Metal Specificity of Pyrroloquinoline Quinone Glucose Dehydrogenase" em. Mol. Biol. & Biophys., Vol. 1, pp. 89-93.						
		Ŵ	ITARO, et al. "Secondary S	tructure Study of Py	rroloquinoline Quinone Glucose Dehydrogenase" 1999, J. Biochem. Mol. Biol. & Biophys., Vol. 1, pp. 209-213.						
		EX	AMINER		DATE CONSIDERED						

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		SODE, et al. "Glu742 Substitution To Lys Enhances The EDTA Tolerance of Escherichia Coli PQQ Glucose Dehydrogenase" 1994, Biotechnology Letters, Vol. 16, No. 5, pp. 455-460.  WITARO, et al. "Site-Directed Mutagenesis Study on the Thermal Stability of a Chimeric PQQ Glucose Dehydrogenase and Its Structural									
			Interpreta	ition" 1999, Applied	Biochemistry and Biotechnology, Vo	ol. 77-79, pp. 15	9-168.				
		1		I	ose Biosensor Based on PQQ-Dependenters, Vol. 32(2), pp. 299-316.						
		MA'	rsushita, et al. "Soluble a Binding Process	nd Membrane-boun of PQQ to the Apoer	d Quinoprotein D-Glucose Dehydrogenzymes"1995, Biosci. Biotech. Bioche	enases of the <i>Act</i> em, Vol. 59(8), p	netobacter ci p. 1548-155	alcoaceticus: 5.	The		
				Characterization" 19	ducose Dehydrogenase from <i>Pseudom</i> 1980, Agric. Biol. Chem, Vol. 44(7), pp	5. 1505-1512.					
			,	De1986, A	n of the Quinoprotein D-Glucose Dehy Agric. Biol. Chem., Vol. 50(1), pp. 49-	-57.					
				Agric.	Gluconobacter suboxydans: Soubiliza Biol. Chem., Vol. 45(4), pp. 851-861						
					rium anitratum: an Enzyme with a No pp. 3630-3639.						
				Biotechnolog	nsor Utilizing an Organic Solvent and y and Bioengineering, Vol. 42, pp. 25	1-254.				-	
			Externally Added Pyri	roloquinoline Quino	n Vivo Reconstitution of Glucose Deh one" 1998, Journal of Electroanalytica	l Chemistry, Vol	. 449, pp. 21	9-224.			
					ase and its Application in an Amperor 2, pp. 71-87.					H_ 44 HU1	
		1	Oxidation of \beta-D-Glucose by	y Soluble, Quinopro	nsfer, and Rate-Determining Tautome tein Glucose Dehydrogenase" 2000, B	iochemistry 200	0, Vol. 39 pp	. 9384-9392.			
		SOD		EDTA Tolerance",	Chimeric Escherichia Coli PQQ Gluc 1997, Denki Kagaku, Vol. 65, No. 6,	pp. 444-451.			ased		
			YAMAZAKI, et al. "Increa		ty of Glucose Dehydrogenase by Cros hnology Letters, Vol. 21, pp. 199-202		ical Modifica	tion" 1999,			
		EX	(AMINER			DATE CONSIL	ERED				

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SHEET 4 OF 5

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INFO	CIT	ATION DISCLOS FATION IN AN		ATTY. DOCKET NO. 43888-098					
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		SODE, at al. "Construction ar	nd Characterization o	f A Linked-Dimeric Pyrroloquinolin- nology Letters, Vol. 21, pp. 707-710.	e Quinone Gluc	se Dehydrog	genase" 1999,		
			Biotechnolo	inone Glucose Dehydrogenase By Cr gy Letters, Vol. 18, No. 9, pp. 997-1	002.				
			Biotechnolog	noline Quinone Glucose Dehydroger y Techniques, Vol. 11, No. 8, pp. 57	7-580.				
				drogenase in Escherichia Coli Under 16, No. 12, pp. 1265-1268.					
		Coli and Acinetobacter Calcoacet	ticus Chimeric Enzyr	For Edta Tolerance In PQQ Gluccose nes" 1995, Biochemical and Biophys 1, pp. 268-273.	sical Research C	ommunicatio	ns, Vol. 211,	No.	
			1996, Enzyme a	drogenase Varying Temperature Prop nd Microbial Technology, Vol. 19, p	p. 82-85.		• • • • • • • • • • • • • • • • • • • •		
		1		Dehydrogenase" 1995, Federation of 364, pp. 325-327.				ol.	
		Engineered Escherich	hia Coli Strain Capab	nt Pyrroloquinoline Quinone (PQQ) le of PQQ Biosynthesis" 1996, Journ	nal of Biotechno	ogy, pp. 239	-243.		
			Journal	ase Overexpression In Escherichia Co of Biotechnology, Vol. 43, pp. 41-44					
		Dehydrog	genase From Acineto	The Steady-State Kinetics of Sugar Obacter Calcoaceticus" 1998, Eur. J. E	Biochem, pp. 25	5-261.			
				No. 3, pp. 238-241.					
		stability :	and substrate specific	noline Quinone Glucose Dehydrogen city" 1999, Protein Engineering, Vol	. 12, No. 1, pp. (	3-70.		That	
	ļ	Dehydrogenase By	Site Directed Mutag	Dynamic Range For Glucose Measurement of Escherichia Coli PQQ Glucose enesis" 1997, Biotechnology Letters, Vol. 19, No. 11, pp. 1073-1077.					
	<u></u>	According to Its Qua		99 Applied Biochemistry and Biotec	hnology, Vol. 7	7-79, pp. 325		-	
l		EXAMINER		DATE CONSI	DERED				

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			FOREIGN PA	TENT DOCUMENTS						
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				bacter Calcoaceticus L.M.D. 79.41"						
		SODE, et al. "Isolation of a Marine Bacterial Pyrroloquinoline Quinone-Dependent Glucose Dehydrogenase" 1995, J. Mar. Biotechnol, Vol. 2, pp. 214-218.								
		Quinoprote	GEERLOF, et al. "Haem-Containing Protein Complexes of Acinetobacter Calcoaceticus As Secondary Electron Acceptors for Quinoprotein Glucose Dehydrogenase" 1989, Antonie van Leeuwenhoek, Vol. 56, pp. 81-84.							
				tein Glucose Dehydrogenase" 1998,						
				Dehydrogenase From Bacterium A 45, pp. 263-269.						
		calcoacetus I	Reveals a Novel Inter	po Form of the Soluble Quinoprotein mal Conserve Sequence Repeat" 199	99, Vol. 289, pp.	319-333.				
			Biop	ose Dehydrogenase and Cytochrome hys. Acta, Vol. 45, pp. 250-262.						
			Enzymes" 1999, Inor	a 1:1 Metal Complex with a PPQ C ganic Chemistry, Vol. 38, No. 11, pp	p. 2753-2755.					
		Holoenzyr	me's Mechanism of A	ntegrated Quinoprotein Glucose Deh ction" 1998, Biochemistry, Vol. 37,	No. 19, pp. 6810	-6818.	_	,		
			Com	grated PQQ-Glucose Dehydrogenase munication, Vol. 36, pp. 395-398.				0		
				emical Enzymatic Sensor" 1977, Ana				5.		
				inetobacter Calcoaceticus" FEBS Le						
		the Additions of Pyrroloquinoline	Quinone, Magnesiun and Bi	f Glucose Dehydrogenase Activity I n or Calcium Ions and Ethylenediam ioenergetics, Vol. 46, pp. 249-254.	ninetetraacetic Ac	id" 1998, Bi	oelectrochen	nistry		
		Characterization of the Memb	brane-Bound Enzyme	Dehydrogenases in Acinetobacter Ca Distinct from the Soluble Enzyme" pp. 63-72.	1989, Antonie va	in Leeuwenl	10ek, Vol. 56			
		from	n Methylobacterium E	Dehydrogenase of Escherichia Coli extorquens" 1995, Biochem. J., Vol.	312, pp. 679-685					
		SODE, et al. "Preparation of L	1997 Biotechnolo	uinoline Quinone Glucose Dehyd gy Techniques Vol. 11, No. 8, pp	o. 577-580.	Trehalose	as an Addi	tive"		
			"Glucose	Oxidase" Toyobo Enzymes (199	8).					
		EXAMINER	DATE CONSIDERED							

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